November 3, 2009

Mr. Walter Nied
On-Scene Coordinator
U. S. Environmental Protection Agency - Region 5
Emergency Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604

Response to Comments on Landfill Gas Collection System Design Report
Mallard North Landfill

Dear Mr. Nied:

On behalf of the Forest Preserve District of DuPage County (FPD), RMT, Inc. (RMT) has prepared this letter in response to the comments on the Landfill Gas Collection System Design Report issued by Weston Solutions, Inc. (Weston) on behalf of the U.S. EPA on October 16, 2009. U.S. EPA also provided a separate comment in the October 18th e-mail to Joe Benedict, which transmitted the Weston comments. In the e-mail transmittal, U.S. EPA requested that the FPD consider using the landfill gas to generate electricity which could power on-site equipment.

During our October 29th meeting we decided not to discuss each comment individually. However we did discuss the comment referenced above along with two other comments (No. 7 and No. 19, see below). The FPD indicated that the landfill gas collection system (LFGCS) would not include equipment to generate electricity to power on-site equipment at this point in time. However, the FPD is open to this idea and will evaluate the data collected during operation of the LFGGC to assess this possibility. Regarding Comment No. 7, the FPD will not be installing a leachate pump in either GEW-1 or GEW-2 at this point in time. However, as indicated below, the system will have the capability to recover leachate, if appropriate in the future. Regarding Comment No. 19, UAV-4 will not be connected to a blower for the reasons outlined below.

Each of the comments is reproduced below followed by the response.

1. U.S. EPA General Comment:

The design does not describe how the construction/investigation-derived waste will be generated.

FPD Response:
Construction derived waste will be handled in a manner similar to the waste that was excavated from the western leachate collection trench. The waste will be placed in lined roll-offs. A generator certification will be completed and the waste will be transported to a licensed Subtitle D facility.

2. U.S. EPA General Comment:

The fence should have bilingual signs placed around the landfill.

FPD Response:
The signs that the District installed earlier this year are bilingual.

3. U.S. EPA General Comment:

The offsite gas collection well LDE-13 is not able to extract gas, therefore, additional action is needed in that area. The offsite probes should also be monitored together with the onsite probes.

FPD Response:
As discussed during the October 8, 2009 meeting, this issue will be evaluated as part of the ongoing response effort being performed jointly by BFI and the FPD.

4. U.S. EPA General Comment:

Currently several old passive vents are being proposed to be used as landfill gas extraction wells. Have all the wells been evaluated to ensure that they can be used as active gas collection wells?

FPD Response:
Yes, the vents have been evaluated, and as described in the response to U.S. EPA comment #3 on the conceptual gas system design report, will be further evaluated once the gas collection system is operating. If the surface seals are found to be questionable during the installation of the gas collection system, a Landtec surface seal boot will be added.

5. Response to U.S. EPA Comment:

Provide an evaluation that the currently proposed flare will have adequate capacity to treat the landfill gas extracted from the proposed system.

FPD Response:
The existing solar flares are designed to combust gas at 2 to 90 cfm. We have discussed our plans with the flare manufacturer and were told that the flares will work for the proposed LFGCS. Each of the two systems, even with additional wells added, will not exceed 90 cfm.

6. Section 1.3 General Project Information:

The text states that the methane in Probe G-116 is likely entering through a crack in the casing. What is the rationale for this statement? Why would it not be entering as a dissolved gas?

FPD Response:
The rationale for this statement was explained in detail in the response to comments on the conceptual gas system design. Please refer to that explanation.

7. Section 2.1.1, LFG Extraction Points:

Upon inspection of the location of new well GEW-2 (ground surface elevation 805.5 feet mean sea level), it appears that much of the screened interval (795.5 to 777.5 feet mean sea level) is likely below the leachate level. This was determined by reviewing nearby well EWL-10 (water table elevation 797 feet mean sea level) and UAV-1 (water table elevation 802 feet mean sea level). Since the screen is expected to be submerged in water, installation of a pump at this proposed location should be included in the design. Other proposed LFG extraction wells should be evaluated carefully in light of the recorded leachate levels for pump installation as part of the LFG system installation.

FPD Response:
If it is determined, following a period of operation, that a pump would be beneficial at this location, it will be considered for installation. Leachate forcemain and compressed air pipes will be installed to this location, to allow for the potential addition of a pump.

8. Section 2.2

Are the blowers explosion proof – i.e., intrinsically safe?

FPD Response:
The motor will be a TEFC (totally enclosed fan cooled) motor, which is the standard for outdoor (and most indoor) landfill blower applications. The blowers do not need to be explosion proof when installed outdoors.

9. Section 3.0

Normally a Construction Quality assurance (CQO) includes inspections, audits, and evaluations of materials and workmanship to determine and document the quality of the constructed facility. The CQA is performed by

a party independent from the Contractor. The CQA should also include the lines of authority. Revise this section.

The waste encountered during construction should be segregated from soil, then placed and covered with plastic liner until transferred into an appropriate storage container for final disposal.

FPD Response:
The CQA will be performed as described in the LFGCS design report and as clarified in these responses. RMT will be performing the CQA and will use staff that are well experienced to provide the CQA.

The soil will be segregated from the waste and the waste will be disposed of properly.

10. Section 3.1

It is stated that a construction documentation report will be prepared as part of the landfill cover repair work documentation. This design is for the gas collection system. Modify this as appropriate.

It is stated in this section that CQA/QC officer will be responsible for observation, testing, and other activities required as part of the CQA/QC program. Only a few of the CQA/QC Officer responsibilities are listed.

The general responsibilities of the CQA Officer that should be considered for inclusion in this section are listed below:

- *Review applicable plans and specifications.*
- *Review the CQA Plan.*
- *Review approved changes to the plans and specifications.*
- *Review and recommend approval or disapproval of site-specific documentation, including contractor submittals, manufacturer's information, installer's information, and referenced standards.*
- *Verify construction is performed in accordance with the plans and specifications. A minimum of one CQA Engineer shall be on-site at all times during landfill construction.*
- *Attend required meetings.*
- *Educate CQA inspection personnel on site-specific CQA requirements and procedures.*

- *Assign CQA inspection personnel to observe all activities requiring monitoring.*
- *Confirm calibrations of CQC and CQA testing equipment are correctly performed and recorded.*
- *Confirm that CQC and CQA tests are properly performed, recorded, and that the results meet specified requirements.*
- *Review contractor personnel qualifications to verify conformance with the specifications.*
- *Review warranty submittals to verify they comply with the specified warranty requirements.*
- *Verify that the contractor is following the approved CQC plan.*
- *Review required submittals and recommend rejection or approval.*
- *Report any unapproved deviations from the CQAP.*
- *Note any activities that could result in damage to installed components.*
- *Prepare and maintain required reports, files, and logs.*
- *Oversee the collection, marking, packaging, and shipping of CQA conformance samples.*
- *Review as-built surveys and drawings.*

A preconstruction meeting should be held at the site prior to the beginning of construction. The meeting should be attended by the CQA engineer, CQA inspection personnel, general contractor, and other concerned parties. Specific topics for the preconstruction meeting should include the plans and specifications, the CQAP, areas of confusion, safety, CQC documentation, and the responsibilities of each party.

FPD Response:
A construction documentation report that describes the remedial actions performed during 2009 will be prepared. The report will document construction of the leachate recovery systems, cover repair, and construction of the LFGCS.

The majority of the CQA Officer responsibilities identified by Weston are applicable for any CQA work, including this project. Every single task that the CQA officer will perform was not identified in the LFGCS design report. The activities to be performed by the CQA Office will include those identified by Weston. A preconstruction meeting will be held prior to the start of construction, which

is typical for this type of work. Daily plan of the day (POD) meetings will also be held between the CQA officer and the contractor(s).

11. Section 3.2.1:

In addition to tasks listed for the CQA officer in this section, the following tasks should also be performed by the CQA officer.

- *Verify that drill cuttings are collected, stored and disposed of as required by the plan.*
- *Check that wells are set straight, true to line, and are constructed using specified materials and procedures.*
- *Verify that the completed wells are visibly marked and protected to prevent damage during construction.*
- *Verify that a boring log and as-built installation diagram are submitted for each well.*

FPD Response:
The tasks identified by Weston will be performed by the CQA Officer.

12. Section 3.2.2:

In addition to tasks listed for the CQA Officer in this section, the following tasks should also be performed by the CQA officer.

- *Verify that conveyance pipe and connections are installed in accordance with the plans and specifications.*
- *Ensure that the proper burial depths and pipe slopes are maintained.*
- *Verify that the pipes slope towards condensate collection tanks, and do not have any dips or low spots where condensate can collect and clog the pipe.*
- *Verify that the specified valves, gauges, gas monitoring ports, and flexible couplings are installed at each well head.*
- *Ensure that pipe is carried to the place of installation and not dragged.*
- *Verify that defective or damaged pipe is not used.*
- *Ensure pipe is not laid when trench conditions or weather is unsuitable.*
- *Ensure pipe is not installed if standing water is present.*
- *Ensure pipe and accessories are carefully lowered into the trench.*
- *Ensure pipe is placed at the lines and grades indicated in the plans and specifications.*

- *Verify that specified bedding is used, and the bedding is graded to provide a cradle for proper support of the pipe.*
- *Verify the full length of each section of pipe rests solidly upon the pipe bedding layer with recesses excavated to accommodate couplings and joints.*
- *Ensure compaction requirements are being met for bedding layers located around the pipe.*
- *Ensure perforated pipe is installed with the perforations facing down, unless otherwise specified.*
- *Verify pipe and fittings are free of dirt, oil, or other contaminants.*
- *Ensure the interior of pipe and accessories are thoroughly cleaned of foreign matter before being lowered into the trench.*
- *Ensure pinch bars and tongs for aligning or turning pipe are used only on the bare ends of pipe.*
- *Verify bell and spigot connections are seated properly with no foreign material introduced into the connection.*
- *If piping is glued, ensure the glue is allowed to set within the recommended temperature range and there is adequate ventilation since the glue may be both hazardous and flammable.*
- *Verify all required leak tests are performed successfully prior to backfilling. The CQA Engineer shall be present for all leak tests.*
- *When work is not in progress, verify that open ends of pipes, fittings, and valves are securely plugged or capped so that no trench water, earth or substance enters the pipe fittings.*
- *Verify the entire length of pipe is cleaned out prior to operating pumps, and pipe and appurtenances are not damaged during shipping, storage, and handling.*
- *Ensure that deliveries are properly recorded.*
- *Verify the correct material type, strength, and pipe sizes have been delivered.*
- *Verify the size, number, and location of pipe perforations are as specified.*
- *Ensure that pipes with gouges deeper than 10% of the wall thickness are rejected or repaired before use.*
- *Ensure that out-of-round pipe which cannot be properly joined together is rejected.*

The following items related to valves should also be checked by the CQA Officer.

- *Verify the specified types of valves are installed (e.g., butterfly, etc.).*
- *Verify open/close indicators are clearly marked on the valve housing.*
- *Inspect valves for leaks, correct operation, and verify that valves are hydrostatically tested.*

FPD Response:

The tasks identified by Weston and that are appropriate for this project (e.g., some, such as placing perforated pipe, do not apply) will be performed by the CQA Officer.

13. Section 3.2.2, 1st Paragraph

It is stated that "[t]hese materials may be substituted with other manufactured brands of pipe that possesses properties meeting the intent of the design." This is considered a design change, and therefore, for any design change, a design change order has to be submitted to the regulatory agencies for their review and acceptance.

FPD Response:

The statement implies that different manufacturers can be used as long as the type and specifications of the pipe meet the design plans. If there are design changes, the agencies will be notified.

14. Section 3.2.2, 2nd Paragraph

It is stated that "[a] comparable granular bedding material may be utilized at the discretion of the CQA /QC officer." This is a design change, and therefore, for any design change, a design change order has to be submitted to the regulatory agencies for their review and acceptance.

It is stated that '[t]he remaining backfill of the trenches will consist of waste and soil that has properties consistent with those of the soil neighboring the trench." All waste that was removed from the trenches should be appropriately segregated, stored, and disposed offsite.

FPD Response:

Granular bedding material will not be utilized; instead, the pipe will be bedded in the existing soil/waste. This change will not have a negative effect on the design, except for the potential for more frequent pipe sag development. If this happens, the sags will be repaired in a timely manner.

15. Section 3.2.2, 4th Paragraph:

It is stated that "[w]aste encountered during trench excavation, as part of the gas collection piping installation, will be backfilled into the trench to the extent possible." All waste that was removed from the trenches should be appropriately segregated and stored, and disposed offsite.

FPD Response:

It is typical practice to backfill waste into the trench to the extent possible. It is rare that all the waste removed from a trench excavation is hauled offsite.

16. Section 3.2.2, LFG Piping Installation:

Specifications for lift size or compaction of soil in trenches is not provided.

FPD Response:
The soil will be compacted in 10" lifts to an extent that it is firm and unyielding. There will be no specific compaction specifications set.

17. Section 3.2.3:

A complete piping and instrumentation diagram for the designed system has not been provided. Include a piping and instrumentation diagram for the designed system. Also provide applicable alarms and communication system for the designed system.

FPD Response:
The P&ID will be prepared as part of the construction plan set and included in the Operations, Maintenance, and Monitoring plan, as well as the alarms for the system. A P&ID is currently being prepared and will be submitted to Landmarc for construction use. A copy can also be provided to U. S. EPA..

18. Section 4, OM&M Plan:

Although routine O&M procedures are included here, there is no specific provision for start-up testing to show that the system performs according to design and can achieve the stated goals. System performance metrics, such as measurement of ROI, flow rates, LFG constituent concentrations, vacuums, etc., should be included in the start-up plan. Specific monitoring points for vacuum should be identified as part of the start-up plan. Frequency of start-up data acquisition should also be included. Although it is mentioned in the text that probes may be monitored on a more frequent basis than monthly, this does not provide the specificity required for monitoring during a system start-up.

FPD Response:
Section 4 of the LFGCS design report was meant to describe the OM&M program in general terms. A detailed OM&M plan will developed during construction and finalized subsequent to startup. A start-up plan will be prepared and submitted to U.S. EPA prior to startup.

19. Figure 1:

UAV-4 is equipped with a solar flare. It is recommended that this location be connected to one of the blowers, since the location is near the edge of the landfill boundary.

FPD Response:
The southwestern corner of the landfill was not identified as an area of concern because methane was not detected in the perimeter probes and there are no potential receptors adjacent to the landfill in this area. A solar flare with solar blower was proposed for UAV-4 because the FPD had an additional unused flare and methane is present at UAV-4 (very low to no pressure). At this time, we do not believe it is necessary to connect this well to the collection system. The focus of the LFGCS should be to target areas of migration near potential receptors, consistent with the long-term goals and remedial objectives agreed to by the U.S. EPA and the District. The District's Board of Commissioners has already agreed to an expanded LFGCS that includes the two new extraction wells and connecting DV-6 to a blower system. The Board's expectation is that District staff and RMT will implement the system as designed and approved by the Board and then collect data to evaluate its effectiveness. Additional modifications to the system will need to be supported by effectiveness monitoring data.

20. Figure 2, Gas Extraction Well (GEW-1 and GEW-2):

To obtain a better seal for the extraction well it is recommended to use bentonite slurry from top of the select granular fill (1-foot) to the ground surface. If not properly hydrated, the hydrated bentonite seal provided for the well design may not provide adequate seal to significantly reduce the possibility of short circuiting of atmospheric air through the gas extraction well.

FPD Response:
We will consider bentonite slurry. Hydrated bentonite chips are typically used, with the CQA officer making sure the chips are thoroughly hydrated. .

21. Figure 2, Gas Extraction Well (GEW-1 and GEW-2):

Provide sufficient surrounding layer of clay with sufficient thickness to prevent atmospheric air from entering the gas collection system from boundary areas.

FPD Response:
The thickness of the existing cover (post cover repair) will be determined when drilling these two new wells. Additional clay will be added, if necessary, and compacted in the vicinity of each well. A Landtec surface seal boot will be considered for installation around the well casing, if conditions warrant.

22. Figure 2, Gas Header Trench, Section 2.1.2:

Define compaction level to be achieved for the granular fill.

FPD Response:
Granular fill will not be used for the gas header trench. A compaction level typically is not defined for granular fill in a pipe trench.

23. Figure 3, Section 2.1.2:

In the Figure, butterfly valves are shown prior to blower, and in the text it is mentioned that gate valves will be installed for controlling the amount of vacuum being applied to the header pipe. Resolve this discrepancy.

FPD Response:
Butterfly valves will be installed near the blower. Gate valves will be installed at each wellhead.

24. Figure 3, Flare

The flares should be equipped with an appropriately designed wind shield.

FPD Response:
The flares will be installed with a windshield, as discussed in the meetings and as shown on the figure. The windscreen will be called out on the construction plan set.

Please contact us with any questions regarding these responses.

Sincerely,

RMT, Inc.

Alan J Schmidt for

Jason R. Schoephoester
Environmental Scientist

Alan J Schmidt

Alan J. Schmidt
Project Manager

cc: Joe Benedict, Forest Preserve District of DuPage County
Omprakash S. Patel, Weston Solutions, Inc.
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